

its height would have probably been just right. The height of the upper story, on the other hand, seems somewhat too high in proportion to the rest of the building. Greater height added to the cornice and robbed from this story would have greatly improved the proportion of the whole. But the most regrettable thing about this building is that, architecturally, it is a mere façade. You turn the corner, and all the rich decorations, even the cornice and the strings, suddenly cease. There is nothing but a blank, uninteresting wall of yellow brick. We could gladly have dispensed with much of the rich decoration of the front (which, in view of the baldness of the sides, we are almost tempted to call overloaded) to have had the satisfaction which would have resulted from an architectural treatment of the whole. The façade is so detached from the blankness behind it, that it seems to lack support, and the fault, which unfortunately is the rule of most of our street architecture, is in this case made more apparent by the satisfying solidity of the neighboring building, whose conspicuous virtue it is to be treated as a whole. The cornices and strings run all around, even into the narrow alley that separates it from the Pope building, so that the great block tells to the eye as a massive and satisfying whole. Messrs. Hartwell & Richardson are to be congratulated in having given us in the Youth's Companion building, perhaps, all things considered, the most successful business block (from an architectural point of view) in the city of Boston. As the façade of the Pope building is a conspicuous and charming example of the use of terra-cotta with brick, so the Youth's Companion building is an unusually fine example of what is possible in brick architecture. Had the rich, mottled, russet brick been used throughout, instead of being supplanted by brownstone in so much of the lower story as is not glass, we think the building as a whole would have gained greatly. And in this case the brownstone strings in the upper stories, which are doubtless called for by the brownstone in the first story, would have been also of brick and would have received a treatment more in harmony with the rest of the building. At present their detail is somewhat heavy. The only other point we are inclined to criticise is the spotty and ineffective terra-cotta decoration in the spandrels of the third-story arches. It has not been well calculated for the height at which it is seen, nor the material in which it is executed. But the proportions of the building as a whole are so excellent, and the detail as a rule so good, that we should hesitate to point to those features which seem less successful, were we not convinced that careful and honest criticism is much needed just now as an aid to further advance in our architecture. We must not close this notice without pointing to the especially successful treatment of the cornice, which, by its great height, and boldly, yet architecturally treated, detail, secures, even with the slight projection which the material calls for, the massiveness required in the crowning member of so massive a structure.

A somewhat amusing example of the extent to which the "spoils" view of the civil service has extended itself to everything connected in any way with public administration, is furnished by the demand of the stone men that the mayor of Boston instruct the city architect to use more stone in his buildings and to stop using so much brick and terra-cotta. The idea that the stone dealers or any other dealers have any right to "a share" in city work regardless of public good would be ludicrous if it did not indicate to what a serious extent the pernicious "spoils" idea has eaten its way into the public mind. To any sane person, not personally interested, it should be obvious that the question of what is best for the public buildings is the only consideration that should be permissible. We may take occasion at another time to refer at length to the interesting manner in which the city architect of Boston is developing the use of brick and terra-cotta.

A FEW NEGLECTED CONSIDERATIONS WITH REGARD TO BRICK ARCHITECTURE.

It is a recognized canon of good design that the characteristic qualities, capabilities, and limitations of any material in which a design is to be carried out must shape and modify the design itself, and that the best results are generally obtained when these qualities, and often the very limitations, are made to suggest the ultimate form. Perhaps in the use of no material is this well-known rule more often nowadays disregarded than in the use of brick, although in the magnificent brick buildings of Lombardy and the Netherlands, which confessedly have inspired our work, the guiding power of this rule is constantly evident, though it was probably instinctively felt rather than consciously formulated. But all our modern design is necessarily more or less self-conscious, and the careful and reasoned investigation of the laws of design is, therefore, if we would do our best, a necessity, though doubtless often an irksome one. It is well to remember that our very self-consciousness makes the transgression of these laws the more repulsive in its results, since they never can have the charm of naïveté.

It cannot be denied that there have been great advances of late in the brick architecture of this country, and great additions have been made to the brick materials at the disposal of the architect, until there are now a great variety of bricks of unusual color (sometimes good and sometimes bad) and of widely different shapes and sizes. Probably never had the brick designer such a variety of material from which to choose.

But while this development has gone on, there has been but little corresponding advance in the use of the commoner materials; partly owing to a want of careful consideration on the part of designers of the various elements of brick design, the special and necessary characteristics of brick construction by means of which effects should be sought, and partly owing to obstacles which, by ill-considered and unsystematic methods of manufacture and vicious habits of craftsmanship, are unnecessarily and often unwittingly thrown in the way of the free and untrammelled use of the commoner materials. A want of due regard to the same laws has often prevented good results from being obtained by the use of the more unusual brick forms which have lately become so fashionable. Every one of discrimination can recall instances in which this disregard has produced worse results than could have been obtained (other things being equal) by a straightforward and simple use of the commoner materials. We do not now refer to the general laws which govern all good design, but to the particular laws which from the very nature of the case, and growing out of the peculiarities and special characteristics of the material, must obtain in all brick designs. A want of regard to these special laws has, we repeat, often marred or seriously injured otherwise good designs, and made the use of expensive forms or qualities of brick worse than useless. It is not maintained that these laws and limitations are never considered, but that instances are rare in modern design in which they all receive the close attention which they deserve and which alone will lead to the best results.

It may be worth while, then, to consider some of the characteristic qualities of brickwork, even though in so doing it will be necessary to make statements that will be but truisms.

A brick building is necessarily made up of small parts. This is perhaps constructionally the quality which most distinguishes a brick building from buildings of other material. In applying, then, to brick buildings the rule of design referred to at the beginning of this paper, it is obvious, that the small pieces of which the design is constructionally made up must be recognized in the design itself, if the best and most characteristic result is to be produced. Large members made up of small pieces should therefore be avoided; they only call attention unpleasantly to the necessary limitations of the material, and make what should be a source of excellence into a shortcoming. The design itself, then, should be made up of small units as the unit of construction itself is small, nor need this produce any unquietness of effect. Recognizing, however, that a sparkling and brilliant effect is most easily obtained by the use of these small units, this should be the effect aimed at, and the decoration therefore should be concentrated upon certain points of the design. This rule is apt to produce the best effects, no matter what the material, but it should especially be regarded when dealing with brick. In brick design, then, the wall surfaces should generally be kept broad and quiet, and decoration should be confined as a rule to cornices and strings, doors and windows, though even the windows are often best when least decorated.

The small unit of construction has the most marked influence on the design of the cornices, which, owing to this fact, can have comparatively slight projection, and must therefore make up in height what they lack in projection to be equally effective. This is a point which is often overlooked in brick designs. Cornices are designed in elevation, as if the projection were to be that of stone. The exigencies of construction require them to be flattened, and the result is a meagre and inadequate crowning member to the building. Many of the palaces of Bologna afford striking examples of the great beauty of well-designed brick cornices, which crown their buildings quite as effectively as the more projecting but lower cornices proper to stone design. An observance of the same law will lead to the prevailing use of surface patterns, where enrichment is desired, instead of those of bold projection. These patterns have a beauty and effectiveness all their own, and their variety is endless.

A similar consideration will suggest that the joints of brickwork should be emphasized rather than disguised. They should be regarded as an element of design to be used, not a defect to be covered up. Laying brick with very close joints is rarely, if ever, effective; it produces a stiff and mechanical, rather than an artistic and beautiful effect, and it deliberately throws away a feature that may be made of interest, while it cannot be wholly hidden; yet the common practice is to treat a joint as if it were something to be ashamed of. But the size of joints is a question that needs to be determined in each case by the exigencies of the particular design, and should be recognized as being as much a question of design as a question of construction.

Designers are apt to take the size of brick for granted. Indeed they cannot often help themselves, but are obliged to rest content with such sizes as the manufacturer places at their disposal. Yet the size and proportion of the brick must of necessity affect the design. In the first place it affects its scale. To convince ourselves of this, we have but to compare the differing scale of our brick buildings, built of brick that average about $8 \times 4 \times 2\frac{1}{2}$ inches, with the English brick buildings with brick averaging when laid $9 \times 4\frac{1}{2} \times 3$ inches, or still more strikingly, with the so-called Pompeian brick recently in vogue $12 \times 4 \times 1\frac{1}{2}$ inches. These last are often very effective, and it does not need to be pointed out how much their size and shape affect the appearance of the building. In choosing a brick it is rare, that enough consideration is given to the questions of size and proportions, and suitability to the design in hand. Often, indeed, this question is left to be determined after the drawings are made, when it ought to receive early consideration. The long, narrow brick with its closely drawn horizontal lines, will add to the horizontality of the building and therefore modify the proportion of the design as a whole. The use of bricks of different sizes in different parts of the same design can, if judiciously managed, be made to assist the proportions as well as to lend an added element of interest. But every such special use of brick needs to be attempted with care, and must be guided by the truest artistic feeling or it will result in disaster. Indeed every such opportunity for effect adds opportunity for mistake—is an added source of possible failure as well as of possible success. Brick manufacturers, as well as brick designers, need to pay more attention to the size of brick. As will be pointed out further on, the present almost entire absence of any standard brick size is a serious obstacle to the free use of combinations of different brick which could otherwise often be employed with excellent decorative effect.

Another point which needs attention is the bond of the brick. The vicious practice, so common in this country, of using a face brick entirely different from the body of the wall, with either no bond or a necessarily slight, concealed one, is utterly to be condemned. In the first place, it is bad construction; the facing adds little or nothing to the strength of the wall, as is often very evident in conflagrations. In the second place, it fails to satisfy the trained eye; even if the bond were sufficient, the impression to the eye that there is no bond, that the wall has a thin facing in no way bound to it, is most disagreeable. In the third place, it does not make so pleasant-looking a wall as either the English, Flemish, or what might be called the American bond. It is too monotonous and mechanical and too lacking in character. Of the three bonds we have mentioned, the English and Flemish are as a rule much better constructionally than what we have called the American (we believe its use is confined to this country), *i. e.*, a bond consisting of a course of headers every four to eight courses. The latter is, however, a sufficiently good bond for all practical purposes, it may indeed be even constructionally better, where more longitudinal than transverse strength

is required in the wall, and sometimes has a special value in design on account of the slightly marked horizontal lines produced by the continuous courses of headers, which, when the design seems to require it, can be emphasized by using headers of a slightly different color, either a brick of different clay or hard-burned brick. The English and Flemish bonds are, however, usually, much more effective, and make a much more picturesque wall, and each of them lends itself to its own peculiar class of diaper patterns of considerable variety, from the simple use of vitrified dark headers in Flemish bond, which is so effective in many of the "old colonial" buildings in and about Philadelphia, to the larger and more complicated patterns found in old English, Dutch, and French brick buildings; as, for instance, the diaper in English bond on the Louis XII. front of the château de Blois. The brick used in the diaper should not form too strong a contrast, or the result will be staring and unquiet. As a rule, the slightest contrast, that will tell, is the most pleasant, and it is often well to break the diaper irregularly to avoid too mechanical an effect, as is done in some of the buildings of the Inns of Court in London. Unfortunately, as already mentioned, the choice of colors in brick to be used together in this way is restricted to those which chance to bond together, and the designer is often obliged to content himself with what he can, rather than with what he would. It will be greatly to the advantage of brick manufacturers, as well as of architects, when a uniform standard size, or series of sizes, shall come into more general use. The contemptible sham of a false bond is sometimes resorted to on account, partly of this irregularity of brick sizes, and partly owing to the habit that has been formed by bricklayers using almost exclusively what we have called the American bond. So ingrained is this habit of the bricklayers that it costs more to use English or Flemish bond, though the additional cost is merely due to the fact that the bricklayers are unaccustomed to it. The more architects insist on the use of these bonds, the less expensive will they become. But at present so pernicious is the habit of our bricklayers that most of them will go to the trouble of cutting off the tails of their headers and make a sham bond, rather than lay their brick with a regular Flemish bond.

Probably the most striking visual quality of a common brick wall is its color. It is red: a very patent fact, which, however, is often not enough considered in relation to the design. In the deep red brickwork, mouldings of too slight projection, or too delicate contour lose their effect. If we desire our wall to be beautiful as well as red, we must remember that a perfectly even shade of very strong color over a large space is always especially unpleasant. Perfectly even shades are never found in nature, and are always to be avoided in art, but especially so with strong colors over large spaces. Now, an unvaried, stupid, tiresome red is not natural to a brick wall. It is natural to a brick wall to have the most delightful variety of color. The stupidity and tiresomeness can only be obtained by deliberately culling and arranging the brick until the effect is as mechanical and as ugly as if the side of the house had been painted, and it is worse than a painted wall, as the wearisome monotony has been painstakingly sought. It looks "neat" perhaps, but it is a trivial and detestable neatness, obtained at the expense of beauty. Brick should only be culled to throw out those of poor quality. It is strange that in nature we admire the wonderful variety of color in a shingle beach, and yet in building choose the dead monotony of a culled pressed-brick wall; that we go to Europe and admire the picturesque beauty of the many-tinted red-tile roofs, and yet in roofing our own buildings prefer to make them look as if they had been painted from a pot of vermilion. As a rule, common brick produce a more beautiful wall than pressed brick, on account of the greater variety of color and their superior texture. The pressed brick are generally best confined to the moulded work and arches, or used in bands in friezes or base course. In city buildings pressed brick can be appropriately used even for a whole building, if the brick are not culled to produce an even color, and they are especially valuable in interior work. But in buildings in the country, set among trees and rising from greensward, the common brick, on all artistic considerations, are greatly to be preferred, and the great variety of color that can be had by combinations of common brick of different makes (provided they will bond with one another) can be made productive of the most charming color harmonies.

To speak of the use of tile and glazes, and of terra-cotta, which must play an important part in any complete brick architecture, is rather beyond the province of this paper. It may be worth while, however, to note that the use of tile of various shapes and colors in connection with brick can be made greatly to enrich our brick

architecture, and will doubtless in the near future lead to new and promising developments. One simple use of roofing tile very common in Auvergne may be mentioned for its effectiveness and its suggestion of further possibilities. The simple pan tile is there used to form the corbelling of the cornices of many of the dwellings. The tiles are imbedded in the wall at one end and project about one fourth of their length. They are laid close together, all with their concave side up. Three or four courses in height, breaking joint with each other, each course projecting beyond the course below, are used to form the corbelling of the cornices. The ends of the tile are filled with cement. The effect is extremely pretty.

It has been the object of this paper, merely to call attention to a few considerations with regard to brick architecture, which, though trite, are often neglected, in the belief that merely to direct attention to them will lead to their being more often regarded. In developing our own brick architecture we cannot do better than turn to the noble brick building of the past, in the endeavor to learn the principles that underlay its developments, and in the hope and belief that these principles will receive more beautiful exposition in the future.

H. LANGFORD WARREN.

A TERRA-COTTA STYLE.

The larger employment of terra-cotta as an architectural dressing promises to do something towards the development of a bolder style of street frontage than we have been in the habit of seeing. A few of the advantages of employing this material we have lately referred to in these pages, such as its durability compared with stone, and even with brick, in a smoke-charged atmosphere; but there is one other recommendation which it has over brick that may be mentioned, namely, its determination of feature. The architecture of every great period has been determined, in a very large degree, by the materials employed; thus we had the monolithic style of Egypt and Greece, in which large masses of stone or marble of great hardness were used in huge rectangular blocks, and we had the composite construction of the Romans giving expression to a more tractable and pliant style of building, in which bricks and smaller stone masonry were combined. The Romanesque and Gothic builders still further developed the composite method by adopting the arch and vault, and showed what noble and grand effects could be achieved by the use of small stones and rubble constructed upon a strictly mechanical system. Every component stone or brick was placed, or rather supported, by compressive action, enabling the builder, so long as he could use massive walls and buttresses, to build vaults unknown to the ancients. Architecture, like history, has repeated itself, and we are now in an age of transition adopting both methods. There is reason for believing, indeed, the monolithic principle is about to reassert once more a sway over the architect. The processes of manufacturing concretes out of broken material and *débris* has led to the production of large monoliths in construction, and burners of terra-cotta have discovered the secret of moulding masses of clay, without appreciable shrinkage or warping, that can take the place of stone. The re-employment of these materials, cast in large forms, will take us back to the trabeate system of the Greeks. But let us act upon principle, and not too hastily.

With brick, the architect had to combine to produce effect. Let us take the Gothic epoch of German brick-building, when the most elaborate structures were built of brick. In the earlier period the brick Romanesque prevailed in the North German lowlands, and a rich style of pier growth was the result, that has never been surpassed. The shafts of brick were grouped together or clustered, the upper part of the shafts being often brought to a square under the abaci, which retained the rectangular forms in plan. The towers, often connected, are well known to students of Rhenish architecture. In the later and Gothic epoch brick features reached their complete development; the piers were made less numerous, but became more elaborate in plan, for we occasionally see squares with membered shafts of half-cylindrical shape on each face, or octagon forms richly shafted and undercut between the salient angles; yet, with all these modifications, the simple outlines were observed, for it is a peculiarity of brick growth that though the parts are multiplied, the contours are preserved simple from the very exigencies of the material. In stone, in large masses, there was scope for the architectural enrichment by deep mouldings, and con-

sequently we find the Gothic arch members often assumed very irregular forms in section. In brick architecture the contrary followed as a matter of course. We observe this in the deep splayed jambs and heads of doorways, where the receding face is broken up into squares or rectangular notches, or enlivened by shafts and members as in a rich moulding. A considerable richness of membering was thus produced, though, as one writer says, owing to the limits imposed by the material, a "strict architectonic law was observed in a certain rhythmic repetition of the design."

Now, what was the cause of the decline of this architecture? We find it was the general return to stone treatment. Hitherto the moulded work and ornamentation were restricted to the legitimate principle of brickwork or repetition of the same general form; but now architects began to copy stone design, the mouldings and tracery of stone, and from that time the brick architecture declined. We instance the history of German brick-building to show what has happened, and will happen again, if we mistake the employment of brick or terra-cotta for stone. Architects have been hitherto content to reproduce "literally" stone features such as windows, cornices, pilasters, and other ornaments in the material, without making allowances for the nature and properties of moulded and baked clay. As we find in the study of brick architecture, while it flourished both in Germany and Italy, the essential idea of brickwork was preserved, and a special treatment was followed depending upon the physical peculiarities of the material. It never imitated stone ornamentation; when it did, the style soon degenerated. We have few modern buildings in London where terra-cotta has been used with satisfactory artistic results. It is generally made a substitute for stone, and some architects design in so accommodating a manner that we constantly see in descriptions of designs sent in in competition, that the dressings or features may be executed in "either stone or terra-cotta." What can be expected from such an illogical process of going to work? If a façade has been designed for stonework, it is ten chances to one ill-adapted for a proper terra-cotta treatment. Large masses of the material cast in pilasters, mullions, jambs, and the like, and jointed with brickwork, are employed, which either crack by unequal settlement of the two materials, or by improper or close jointing of the terra-cotta, or are so warped in the lines as to destroy all sharpness of effect and accuracy in the work. In many recent city buildings in Fleet Street, the Strand, and the Poultry there are instances of misapplication arising chiefly from a desire to imitate stone features in the bulk. Thus we see whole windows with their ordinances cast in a few pieces of terra-cotta, arches constructed of blocks of large size, reproducing the details of stonework. By using smaller blocks — a certain multiple of the brick courses — and by preserving in the design a treatment dictated by the importance of avoiding inequalities of mass or undercut members, there is much to be done to render terra-cotta a pleasing and useful substitute of stone in brick buildings. The brickwork of Germany affords in many of its details very admirable forms, as those of jambs and piers, stringcourses, water-tables, cornices, and other features of a decorative character. No better models for moulded work can be seen than in many of the brick churches of that country. A larger and bolder manner of building or ornamentation must of necessity arise if architects follow the principle we have suggested. As the difficulties in the way of firing, etc., are overcome, so will the material be made into large blocks. The limits of the ornamentation are, however, set, and the forms which can be most easily moulded must stamp the architecture that is evolved from such material. For warehouse purposes, and street architecture generally, we have experience to work upon. In Farringdon Street, near Holborn Viaduct, a large warehouse for Marcus Ward & Co. is erected, in which a nice cream light red-toned terra-cotta has been introduced in the red brickwork, blending well with the latter. The style is a free Renaissance, a large, wide, and somewhat awkwardly proportioned gable occupying a considerable portion of the front, with one low wing. The centre of the gable has a bay window entirely of the material, and the large two and three light windows with mullions and ornamental heads indicate the value of terra-cotta for window openings of a large flat kind. A deep cornice, with flat modelled trusses of slight projection and relief ornament between, runs along the front, and from this the raking cornice and coping, also of terra-cotta, springs. Here the projections are kept flat. We could point to other recent examples of the use of the material; in the mean time the value of relief of a light kind, for red brickwork especially, and a tint that will harmonize with the red work and keep clean, are obvious advantages, not to be slightly passed over. — *The Building News*.